

REMARKS

The Examiner rejected claims 1-7 under 35 U.S.C. §103(a) as allegedly being unpatentable over Applicant's admitted prior art (hereinafter AAPA) in view of Horiguchi et al., US Patent No. 5,666,533 (hereinafter Horiguchi) further in view of Shaughnessy, US Patent No. 6,026,235 further in view of Sreedhar et al., US Patent No. 6,182,284 (hereinafter Sreedhar).

Applicant respectfully traverses the §103(a) rejections with the following arguments.

35 U.S.C. §103(a)

The Examiner rejected claims 1-7 under 35 U.S.C. §103(a) as allegedly being unpatentable over Applicant's admitted prior art (hereinafter AAPA) in view of Horiguchi et al., US Patent No. 5,666,533 (hereinafter Horiguchi) further in view of Shaughnessy, US Patent No. 6,026,235 further in view of Sreedhar et al., US Patent No. 6,182,284 (hereinafter Sreedhar).

Claim 1

Applicant respectfully contends that claim 1 is not unpatentable under 35 U.S.C. §103(a) over AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar, because AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest each and every feature of claim 1, as explained in the following examples.

As a first example relating to step (a) of claim 1, Applicant respectfully contends that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest "(a) forming, for each block of assignment statements, a corresponding array, each array comprising a plurality of elements corresponding to respective ones of the statements and populating the elements with attributes of the statements including the expression at the righthand side of the statement".

The Examiner argues: "AAPA teaches ... (a) forming, for each block (E.g. see RE page 2, lines 2, blocks B1 and B2) of assignment statements (E.g. see RE page 2, line 3, "S<sub>1</sub>, 'S<sub>1</sub>, ..."), a corresponding array (E.g. see RE page 2, line 3, the examiner interprets {'S<sub>1</sub>, 'S<sub>2</sub>, ... 'S<sub>M</sub>} is a single dimension array), each array comprising a plurality of elements corresponding to respective ones of the statements and populating the elements with attributes of the statements including the expression at the right-hand side of the statement (E.g. see RE page 2, lines 14-20 and 24-27)".

In response, Applicant respectfully contends that AAPA does not identify {'S<sub>1</sub>, 'S<sub>2</sub>, ... 'S<sub>M</sub>} as an array and most certainly does not disclose forming an array as a method step. Rather, the specification on page 2, line 3 specifically identifies {'S<sub>1</sub>, 'S<sub>2</sub>, ... 'S<sub>M</sub>} as a set of assignments, wherein the brackets {} denote a "set" as is common in the field of logic, and wherein the list 'S<sub>1</sub>, 'S<sub>2</sub>, ... 'S<sub>M</sub> denotes the members of the set (i.e., assignment statements). Although the meaning of

"set" is well understood in the art, Applicants note that an applicable definition of "set" is: "a group of things of the same kind that belong together and are so used". See *The American Heritage Dictionary* 1122 (2d ed. 1985). The symbolic notation  $\{ 'S_1, 'S_2, \dots 'S_M \}$  is standard notation for describing a set of elements. AAPA does not disclose the method step of **forming an array** from the members of the set (i.e., the assignment statements) as required by claim 1. Applicant respectfully requests the Examiner to cite specific language in AARP that allegedly discloses said "forming an array" step.

As a second example relating to step (b) of claim 1, Applicant respectfully contends that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest "(b) processing, in each array, each assignment statement in turn, in the order from the last statement to the first, the processing comprising the inspection of each unprocessed assignment statement in turn, in the order from the last unprocessed assignment statement to the first, to determine if the variable appearing on the left-hand side of the unprocessed assignment statement appears on the right-hand side of the assignment statement being processed".

The Examiner argues: "AAPA teaches ... (b) processing, in each array, each assignment statement in turn, the processing comprising the inspection of each unprocessed assignment statement in turn, in the order from the last unprocessed assignment statement to the first, to determine if the variable appearing on the left-hand side of the unprocessed assignment statement appears on the right-hand side of the assignment statement being processed (E.g. see RE page 2, lines 14-20 and 24-27)".

In response, Applicant respectfully contends that AAPA does not teach "comprising the inspection of each unprocessed assignment statement in turn ... to determine if the variable appearing on the left-hand side of the unprocessed assignment statement appears on the right-hand side of the assignment statement being processed". The specification, page 2, lines 14-20 and 24-27 merely list exemplary blocks of assignments statements and most certainly do not disclose the method step of inspecting each assignment statement in turn to determine if the variable appearing on the left-hand side of the unprocessed assignment. Applicant respectfully

requests the Examiner to cite specific language in AARP that allegedly discloses said inspecting step.

In addition, Applicant respectfully contends that the Examiner's argument for modifying AARP by the alleged teaching of Horiguchi is not legally persuasive. The Examiner alleges that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Horiguchi into the system of AAPA, to process in the order from the last statement to the first using stack frame. The modification would have been obvious because one of ordinary skill in the art would have been motivated to determine which LSH to be executed when specified conditions occur with the order list."

In response, Applicant respectfully contends that the Examiner has not provided a legally persuasive reason for modifying AARP by the alleged teaching of Horiguchi. In particular, established case law requires that the prior art must contain some suggestion or incentive that would have motivated a person of ordinary skill in the art to modify a reference or to combine references. See *Karsten Mfg. Corp. V. Cleveland Gulf Co.*, 242 F.3d 1376, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001) ("In holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in a way that would produce the claimed invention"). See also *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the motivation obvious unless the prior art suggested the desirability of the modification."). The Examiner has not made any showing of where the prior art suggests: "motivat[ation] to determine which LSH to be executed when specified conditions occur with the order list". Thus, the Examiner has provided a reason for the combination by speculation, and not by teachings of the prior art. By not citing any suggestion or incentive in the prior art of "motivat[ation] to determine which LSH to be executed when specified conditions occur with the order list", the Examiner has failed to establish a *prima facie* case of obviousness in relation to claim 1.

As a third example relating to step (c) of claim 1, Applicant respectfully contends that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest "(c) during step (b), in each array, if the variable appearing on the lefthand side of the unprocessed assignment statement also appears on the righthand side of the assignment statement being processed, replacing all occurrences of such variable on the righthand side of the assignment statement being processed, nonrecursively, by the righthand side of the said unprocessed assignment statement".

The Examiner argues: "AAPA teaches ... (c) during step (b), in each array, if the variable appearing on the left-hand side of the unprocessed assignment statement also appears on the right-hand side of the assignment statement being processed, replacing all occurrences of such variable on the right-hand side of the assignment statement being processed, non-recursively, by the right-hand side of the said unprocessed assignment statement;" (E.g. see RE page 2, lines 29-30, "... the output variables  $\{X_2, X_4, X_6\}$  will produce the same computed values", the examiner interprets that the step (c) is inherent otherwise, it will not produce the same results ( $\{X_2, X_4, X_6\}$ )).

In response, Applicant respectfully contends that the inherency alleged by the Examiner does not exist, because the Examiner has not proved that executing step (c) is the only methodology that will produce the same results  $\{X_2, X_4, X_6\}$ .

Moreover, inherency cannot be used to reject a claim under 35 U.S.C. §103(a). *In re Shetty*, 566 F.2d 81, 86, 195 U.S.P.Q. 753, 756-57 (C.C.P.A. 1977) (reversing the Board's rejection of a claim based on alleged inherency under 35 U.S.C. 103 of a method to curb appetite, and stating: "[t]he inherency of an advantage and its obviousness are entirely different questions. That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown").

As a fourth example relating to step (d) of claim 1, Applicant respectfully contends that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest "(d) forming, from each array, a corresponding new block of assignment statements comprising the statements processed according to steps (b) and (c) less

any statements which, after processing, is either an identity (the left and right sides of the statement are identical) or whose lefthand side variable is not one of the output variables".

The Examiner argues: "AAPA teaches ...(d) forming, from each array, a corresponding new block of assignment statements comprising the statements processed according to steps (b) and (c) less any statements which, after processing, is either an identity (the left and right sides of the statement are identical) or whose left-hand side variable is not one of the output variables" (Again, see as noted above of step (c), the new formed block is inherent so that the block is the corresponding output variables  $\{X_2, X_4, X_6\}$ ).

In response, Applicant respectfully contends that the inherency alleged by the Examiner does not exist, because the Examiner has not proved that executing step (d) is the only methodology that will produce the same results  $\{X_2, X_4, X_6\}$ .

Moreover, inherency cannot be used to reject a claim under 35 U.S.C. §103(a). *In re Shetty*, 566 F.2d 81, 86, 195 U.S.P.Q. 753, 756-57 (C.C.P.A. 1977) (reversing the Board's rejection of a claim based on alleged inherency under 35 U.S.C. 103 of a method to curb appetite, and stating: "[t]he inherency of an advantage and its obviousness are entirely different questions. That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown").

As a fifth example relating to step (e) of claim 1, Applicant respectfully contends that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest "(e) creating, from each new block of assignment statements, a corresponding new array, each array comprising a plurality of elements corresponding to respective ones of the statements and populating the elements with attributes of the statements including the expression at the righthand side of the statement".

The Examiner argues: "argues: "AAPA teaches ...(c) creating, from each new block of assignment statements, a corresponding new array, each array comprising a plurality of elements corresponding to respective ones of the statements and populating the elements with attributes of the statements including the expression at the right-hand side of the statement;" (Again, see as noted above of step (d))".

In response, Applicant respectfully contends that AARP does not inherently teach step (e) for the same reasons stated *supra* by Applicant in relation to step (d). Applicant further contends that inherency cannot be used to reject a claim under 35 U.S.C. §103(a) for the same reasons stated *supra* by Applicant in relation to step (d).

As a sixth example relating to step (f) of claim 1, Applicant respectfully contends that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest "(f) sorting, in each new array, the array elements in alphabetical order using the output variable name as the key".

The Examiner argues: "The combination of AAPA and Horiguchi do not disclose sorting, in each new array, the array elements in alphabetical order using the output variable name as the key. Shaughnessy, however in an analogous art, discloses in a manner such as "(f) sorting, in each new array, the array elements in alphabetical order using the output variable name as the key." (E.g. see Shaughnessy art FIG. 3 step 301 and associated text, e.g. Col. 10:2527). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Shaughnessy into the system of AAPA as modified by Horiguchi, to sort the array by name. The modification would have been obvious because one of ordinary skill in the art would have been motivated to allow fast binary searching by address or by name."

In response, Applicant respectfully contends that the Examiner has not provided a legally persuasive reason for modifying AARP and Horiguchi by the alleged teaching of Shaughnessy. In particular, established case law requires that the prior art must contain some suggestion or incentive that would have motivated a person of ordinary skill in the art to modify a reference or to combine references. See *Karsten Mfg. Corp. V. Cleveland Gulf Co.*, 242 F.3d 1376, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001 ("In holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in a way that would produce the claimed invention"). See also *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984 ("The mere fact that the prior art could be so

modified would not have made the motivation obvious unless the prior art suggested the desirability of the modification.”). The Examiner has not made any showing of where the prior art suggests: “motivat[ation] to allow fast binary searching by address or by name”. Thus, the Examiner has provided a reason for the combination by speculation, and not by teachings of the prior art. By not citing any suggestion or incentive in the prior art of “motivat[ation] to allow fast binary searching by address or by name”, the Examiner has failed to establish a *prima facie* case of obviousness in relation to claim 1.

As a seventh example relating to step (g) of claim 1, Applicant respectfully contends that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach or suggest “(g) comparing the arrays to detect the equivalence of two blocks of assignment statements.”

The Examiner argues: “The combination of AAPA, Horiguchi and Shaughnessy do not disclose comparing the arrays to detect the equivalence of two blocks of assignment statements. Sreedhar, however in an analogous art, discloses in a manner such as “(g) comparing the arrays to detect the equivalence of two blocks of assignment statements.” (E.g. see Sreedhar art, FIG. 21D, 24A, 25D and associated text, e.g. col. 38;25-27). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Sreedhar into the system of AAPA, Horiguchi and Shaughnessy, to detect the equivalence of two blocks of assignment statements. The modification would have been obvious because one of ordinary skill in the art would have been motivated to validate the various intermediate-level codes during the optimization phases.”

In response, Applicant respectfully contends that the Examiner has not provided a legally persuasive reason for modifying AARP and Horiguchi by the alleged teaching of Shaughnessy. In particular, established case law requires that the prior art must contain some suggestion or incentive that would have motivated a person of ordinary skill in the art to modify a reference or to combine references. See *Karsten Mfg. Corp. V. Cleveland Gulf Co.*, 242 F.3d 1376, 58 U.S.P.Q.2d 1286, 1293 (Fed. Cir. 2001 (“In holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior



art that would have led a person of ordinary skill in the art to select the references and combine them in a way that would produce the claimed invention"). See also *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984 ("The mere fact that the prior art could be so modified would not have made the motivation obvious unless the prior art suggested the desirability of the modification.")). The Examiner has not made any showing of where the prior art suggests: "motivat[ation] to validate the various intermediate-level codes during the optimization phases". Thus, the Examiner has provided a reason for the combination by speculation, and not by teachings of the prior art. By not citing any suggestion or incentive in the prior art of "motivat[ation] to validate the various intermediate-level codes during the optimization phases", the Examiner has failed to establish a *prima facie* case of obviousness in relation to claim 1.

Based on the preceding arguments, Applicants respectfully maintain that claim 1 is not unpatentable over AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar, and that claim 1 is in condition for allowance. Since claims 2-5 depend from claim 1, Applicants contend that claims 2-5 are likewise in condition for allowance.

In addition with respect to claim 2, Applicant challenges the Examiner's official notice and request that the Examiner bring forth evidence to support the alleged inherency. Moreover, inherency cannot be used to reject a claim under 35 U.S.C. §103(a), as explained *supra*.

In addition with respect to claim 3, Applicants respectfully maintain that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach the feature: "whereby Step (a) is preceded by a formatting step of the righthand side of each assignment statement according to predetermined rules". Applicant respectfully requests the Examiner to cite specific language in AARP that allegedly discloses the preceding feature of claim 3.

In addition with respect to claim 4, Applicants respectfully maintain that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach the feature: "whereby in Step (d) the righthand side of each included assignment statement is formatted according to predetermined rules". Applicant respectfully requests the Examiner to cite specific language in AARP that allegedly discloses the preceding feature of claim 4.

In addition with respect to claim 5, Applicants respectfully maintain that AAPA in view of Horiguchi, further in view of Shaughnessy and further in view of Sreedhar does not teach the feature: "whereby at the conclusion of Step (c) if the number of assignment statements is not equal to the number of output variables, abandoning the method with an error message". Applicant respectfully requests the Examiner to cite specific language in AARP that allegedly discloses the preceding feature of claim 5.

#### Claim 6

The Examiner states: "As Per Claim 6, is the apparatus claim corresponding to the method claim 1 and is rejected under the same reason set forth in connection of the rejection of claim 1." In response, Applicant relies on Applicant's arguments *supra* relating to claim 1 as being likewise applicable to claim 6.

#### Claim 7

The Examiner states: "As Per Claim 7, is the computer program product claim corresponding to the method claim 1 and is rejected under the same reason set forth in connection of the rejection of claim 1." In response, Applicant relies on Applicant's arguments *supra* relating to claim 1 as being likewise applicable to claim 7.

## CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invites the Examiner to contact Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0457.

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17